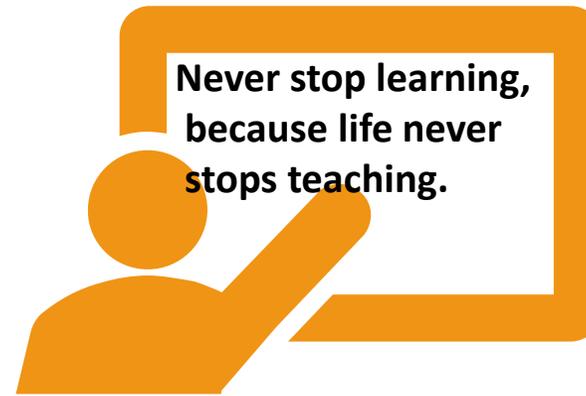


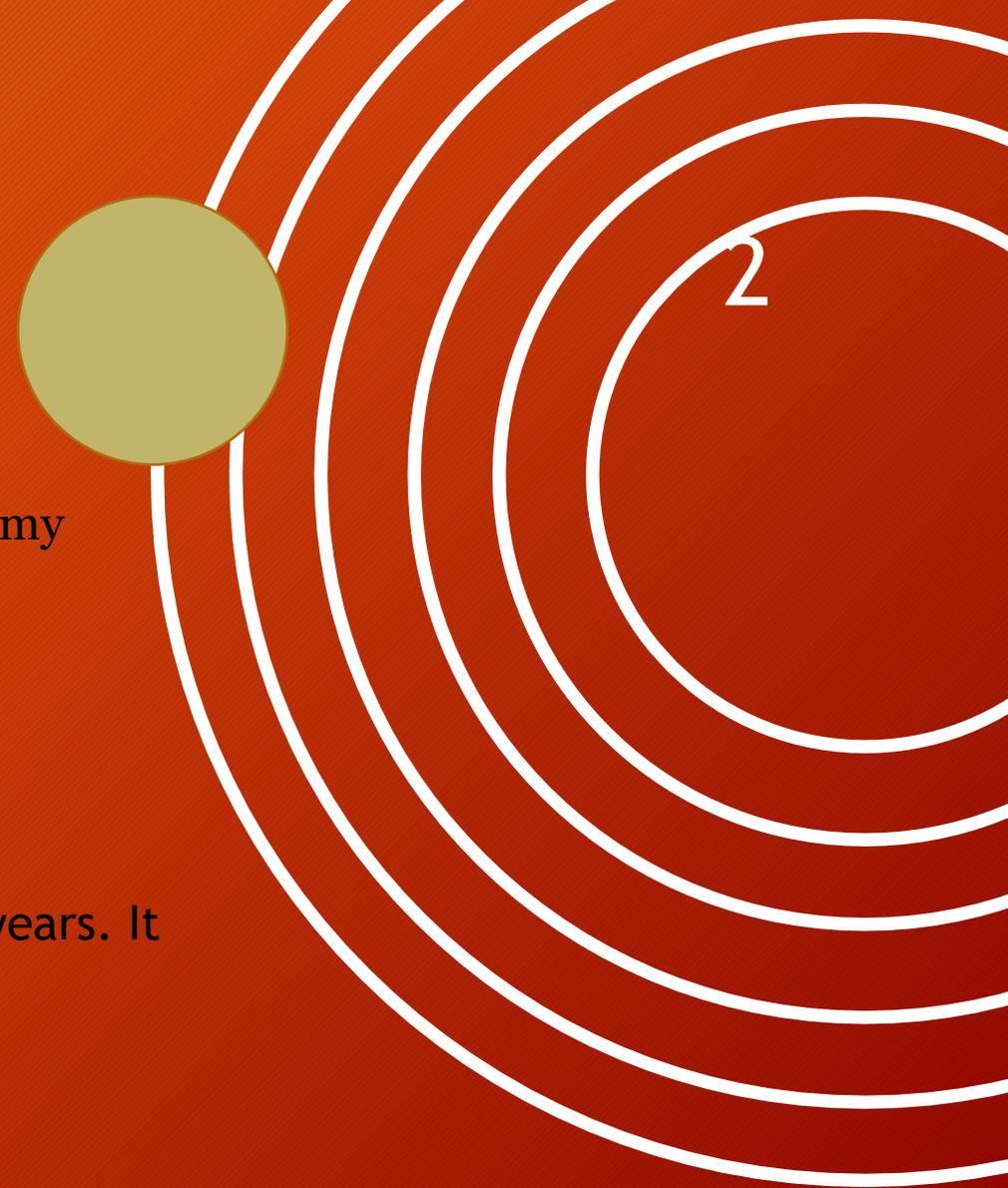
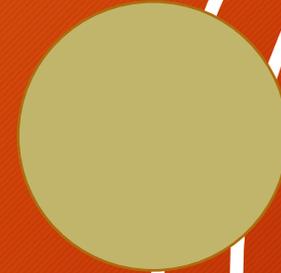
BaoFeng and Comms Education

Milly Brown



Introduction Disclaimer

- ✓ I am not an expert - I am learning, just like you
- ✓ I passed my Technician exam in April 2022 and have my GMRS License. My call sign is KE8UME
- ✓ I purchased my first Baofeng radio, a BF-F8HP (UV-5R 3rd Gen) 8 watt in November 2021
I also have 4 Baofeng AR-152 10 watt radios
- ✓ I have taken several radio classes the past several years. It DOES help comprehend a highly complex topic



Disclosure and Safety



*****Disclosure: It is illegal to transmit without an amateur radio license issued by the Federal Communications Commission (FCC).**



*****NEVER push the Push-to-Talk (PTT) button, or transmit on your radio, without an antenna firmly screwed in; failure to do this will result in severe damage to your radio and is dangerous to your health.*****



FUN FACT: www.FindASpring.org

Class Content

4

Lesson 1

**BASICS OF THE
BAOFENG UV-
5R/AR-152 RADIO**

Lesson 2

**RADIO SPECTRUM
BANDS AND
FREQUENCIES**

PROGRAM RADIOS

Lesson 3

**COMMUNICATIONS
PLANNING AND
PRACTICE**

Getting to Know Your Radio

(handout)

5

- **Power knob** - Turn clockwise to turn the radio on; turn counterclockwise to turn off.
- **Push-to-Talk (PTT) button** - This is the transmit button on the side that allows you to talk. Do not press this button yet!
- **VFO/MR button** - This button switches between Frequency mode and Channel mode.
- **A/B button** - This button switches between the top and bottom displays.
- **Keypad** - You use these keys to program your radio.





Identify Your Radio's Model Number

- Look at the front of your radio underneath the keypad to see it's model number;
- The UV-5R is by far the most popular!



Screen Icon Definitions

8

ICON	DESCRIPTION
188	Operating channel
⁷⁵ 25	Operating frequency
CT	CTCSS activated
DCS	DCS activated
+ -	Frequency offset direction for accessing repeaters
S	Dual Watch/Dual Reception functions activated
VOX	VOX function enabled
R	Reverse function activated
N	Narrow band selected
	Battery level indicator
	Keypad lock function activated
L	Low transmit power
▲ ▼	Indicates A or B frequency is in use
	Signal strength



Menu Operation

Baofeng UV-5R

Press Menu to enter the menu –

Press Menu again to change options – Use arrows

Press Menu a third time to confirm and save the change

Exit exits the Menu or it times out automatically

To Turn Voice Prompt Off:

Menu 14 – Press Menu again

Arrow down to OFF

Hillman BaoFeng and Comms Class

Press Menu to Save Change



Baofeng Menu Operation with Arrow Keys

1. Press the **MENU** key to enter the menu.
2. Use the **▲** and **▼** keys to navigate between menu items.
3. Once you find the desired menu item, press **MENU** again to select that menu item.
4. Use the **▲** and **▼** keys to select the desired parameter.
5. When you've selected the parameter you want to set for a given menu item;
 - a. To confirm your selection, press **MENU** and it will save your setting and bring you back to the main menu.
 - b. To cancel your changes, press **EXIT** and it will reset that menu item and bring you out of the menu entirely.
6. To exit out of the menu at any time, press the **EXIT** key.



Baofeng UV-5R Menu Definitions

(Handout)

11



UV5R-Menu-Defi
nitions

<https://www.youtube.com/watch?v=7jFn7ZGVldg>

Baofeng Menu Operation with Numeric Shortcuts



1. Press the **MENU** key to enter the menu.
2. Use the numerical keypad to enter the number of the menu item.
3. To enter the menu item, press the **MENU** key.
4. For entering the desired parameter:
 - a. Use the numerical keypad to enter the numerical short-cut code.
5. And just as in the previous section;
 - a. To confirm your selection, press **MENU** and it will save your setting and bring you back to the main menu.
 - b. To cancel your changes, press **EXIT** and it will reset that menu item and bring you out of the menu entirely.
6. To exit out of the menu at any time, press the **EXIT** key.

Common Menu Settings with Shortcuts

13

0. Squelch (Get rid of static) How strong a signal needs to be for your radio to activate the speaker. Set at 1 unless you're getting a lot of static.
2. TXP (Power) Use the lowest setting. pressing # also does this.
4. VOX (Voice activity) Turn this off unless sending data via a digital mode.
7. TDR (Dual Channel Standby) (Listen to two frequencies at once) Turn this "on". it enables you to listen to both frequencies.
8. Beep (Beeps when you press a key, duh) Please turn this off.
9. TOT (Talk out timer) (Prevents you from accidentally transmitting for too long)
Prevents you from talking too long or the radio accidentally staying open too long. Max set to 60.
14. Voice (Enable or disable the sexy Baofeng lady or make her speak Chinese if you so desire)

Common Menu Settings (Cont)

14

18. SC-REV (Scanning method) (What will it do when it hears something while scanning)

29. WT-LED (Sets the color of screen for standing by)

30. RX-LED (Sets the color of the screen while receiving)

31. TX-LED (Sets the color of the screen while Transmitting)

39. ROGER (Roger beep) (Plays a tacti-cool noise when you release the PTT button like a walkie talkie from those movies)

40. RESET (Reset all or some settings to factory default)

Lock That Keypad



To lock the keypad on your Baofeng UV-5R radio and prevent accidental changes, follow these steps:

1. Make sure the radio is not locked and is in frequency mode (VFO).
2. Press and hold the # key for approximately 2 seconds. This will lock the keypad.
3. To unlock the keypad, repeat the same step by pressing the # key for 2 seconds again.

When the keypad is locked, it disables most of the front face buttons except for the switch button that toggles between the FM radio and frequency mode¹.

Keep in mind that this feature is useful to prevent unintentional adjustments while using the radio.

15

Scanning with the UV5R



To use the Scan function on your Baofeng UV-5R radio :

1. Put radio is in Channel mode (VFO/MR).

2. Press and hold the * SCAN key for approximately 2 seconds.

16

3. The channels programmed into your radio will be scanned quickly. It continues to scan until it picks up a signal.

4. The Behavior following is determined by your SC-REV settings - (MENU 18)

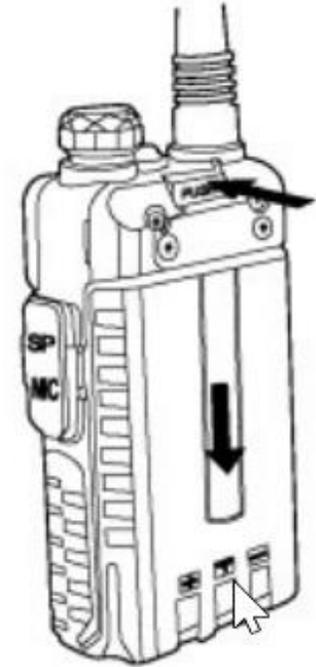
- TO - Time Out- When it “hears” the signal, it will pause scanning - listen for several seconds and resume scanning after about 10 seconds regardless
- CO - Carrier Operation - When it hears a signal, it will stop at that signal and stay there as long as it can hear it. If it loses the signal, it will resume scanning.
- SE - Search - Scans for first signal radio hears then will end the scan.

5. You can scan frequencies the same way -sequentially.

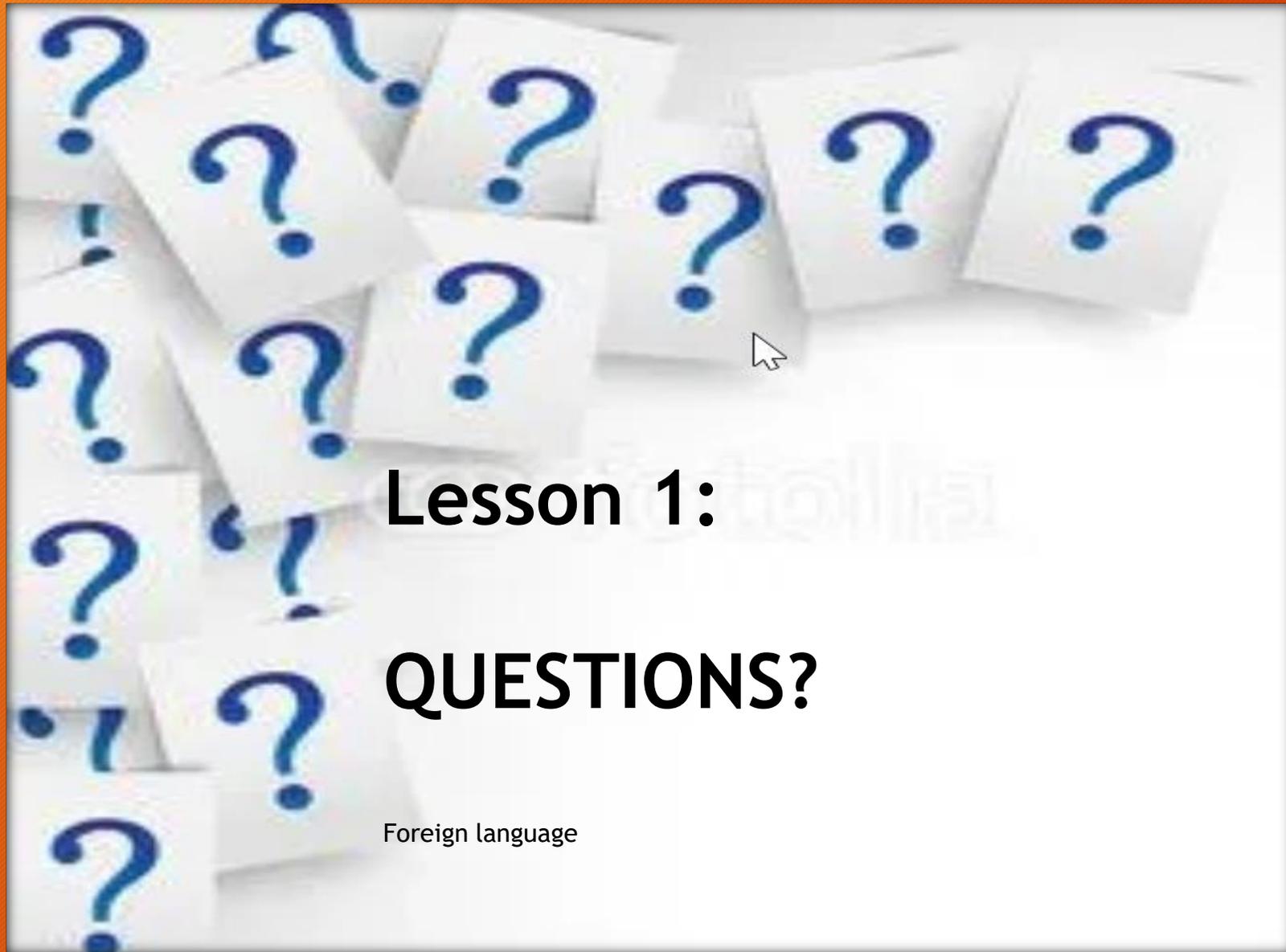
<https://www.youtube.com/watch?v=JprOVjJcArE>

- Turn off the radio before removing the battery.**
- Slide the battery latch, at the bottom of the radio's body, in the direction indicated by the arrow.**
- Slide down the battery for about 1 to 2 centimeters, and then remove the battery from the radio's body.**

Always have a back up battery fully charged



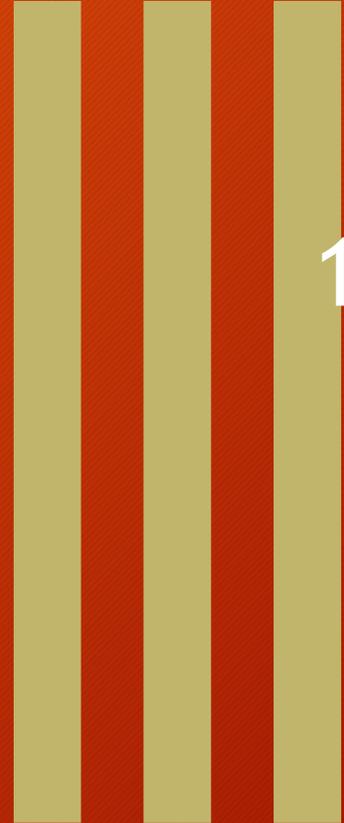
Let's Change that Battery



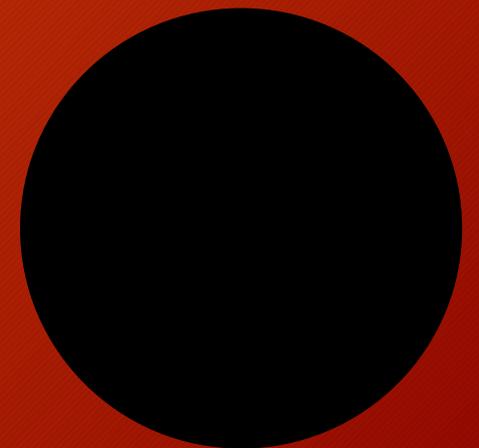
Lesson 1:

QUESTIONS?

Foreign language



18



Lesson 2:

Radio Spectrum Bands and Frequencies

19

The radio spectrum is a part of the electromagnetic spectrum that ranges from 3 Hz to 3000 GHz or 3 THz. The electromagnetic waves in this spectrum, called radio waves, are widely used in technology, especially telecommunication technologies. The spectrum is divided into different frequency bands, with each band having unique characteristics and having regulatory bodies allocate those bands for specific allocations, ranging from aeronautical and maritime communication to AM and FM radio.

Radio Spectrum Bands and Frequencies

References

20

How the Radio Spectrum Works Marshall Brain <https://electronics.howstuffworks.com/radio-spectrum.htm>

Radio Frequency Bands | TeraSense <https://terasense.com/terahertz-technology/radio-frequency-bands/>

Radio Spectrum - an overview | ScienceDirect Topics
<https://www.sciencedirect.com/topics/engineering/radio-spectrum>

What are the spectrum band designators and bandwidths?
https://www.nasa.gov/directorates/heo/scan/communications/outreach/funfacts/txt_band_designators.html

What is Radio Spectrum? <https://www.transportation.gov/pnt/what-radio-spectrum>

United States Frequency Allocations and Radio Spectrum

UNITED STATES FREQUENCY ALLOCATIONS THE RADIO SPECTRUM

RADIO SERVICES COLOR LEGEND

AIRBORNE SERVICE	AERIAL SERVICE	AIR-TO-AIR SERVICE
AERIAL MOBILE SERVICE	AERIAL SERVICE	AERIAL MOBILE SERVICE
AERIAL MOBILE SERVICE	AERIAL MOBILE SERVICE	AERIAL MOBILE SERVICE
AERIAL MOBILE SERVICE	AERIAL MOBILE SERVICE	AERIAL MOBILE SERVICE
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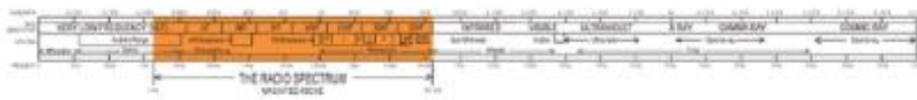
ACTIVITY CODE

EQUIPMENT EXCISE	EQUIPMENT EXCISE
EQUIPMENT EXCISE	

ALLOCATION USAGE DESIGNATION

STATUS	CLASS	REMARKS
Primary	F1, F2, F3	CLASSIC SERVICE
Secondary	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z	CLASSIC SERVICE

U.S. DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Office of Spectrum Management
October 2020



NOTE: This chart is intended to provide a general overview of the radio spectrum and is not intended to be used as a reference for specific frequency allocations. For more information, please refer to the National Telecommunications and Information Administration's Office of Spectrum Management website.

Radio Spectrum Bands with Example Uses

Radio Frequency Band	Common Uses
Extremely Low Frequency (ELF)	Communication with submarines
Super Low Frequency (SLF)	Communication with submarines
Ultra Low Frequency (ULF)	Communication within mines
Very Low Frequency (VLF)	Navigation, time signals
Low Frequency (LF)	Navigation, time signals, AM radio
Medium Frequency (MF)	AM radio
High Frequency (HF)	Shortwave radio, amateur radio
Very High Frequency (VHF)	FM radio, television, aviation communications
Ultra High Frequency (UHF)	Television, mobile phones, Wi-Fi
Super High Frequency (SHF)	Satellite communication, Wi-Fi, radar
Extremely High Frequency (EHF)	Satellite communication, radar, millimeter wave scanners
Tremendously High Frequency (THF)	Experimental, potential future wireless data transmission

22

Different Radio frequency bands and their uses

Knowing which radio frequency bands are used for which purposes can make it easier for amateur radio operators to find an appropriate frequency for operating their radio systems.

Baofeng UV-5R

Handheld transceiver: FM (receiving only) VHF/UHF radio

- VHF/UHF are Radio bands of the Radio Spectrum
- VHF/UHF bands have specific frequencies on the radio spectrum
 - VHF - 30 -300 MHz
 - UHF - 300 - 3000 MHz
- There are specific assigned frequencies for ham radio operations within the bands.

Band ▾	Frequency ▾	Wavelength ▾
Very high frequency	30-300 MHz	10-1 m
Ultra high frequency	300-3,000 MHz	1-0.1 m

Is Frequency the Same Thing as a Channel?

24

No, they are not interchangeable.

One is a specific operating frequency, and the other is a frequency entered and assigned to a specific band or radio service.

VFO/MR – VFO stands for Variable Frequency Oscillator and is the UV-5R 's frequency mode. MR is Memory or channel mode and is the list of frequencies programmed into the radio's memory bank.

VHF/UHF

25

The Baofeng UV5R radios are dual band radios transmitting in both **VHF** and **UHF**.

VHF (very high frequency) is meant for the outdoors and doesn't penetrate buildings very well. It's commonly used with boaters.

UHF (ultra-high frequency) radios work both indoors and outdoors and can penetrate both concrete and steel.

VHF: MURS (Multi-Use Radio Service)
5 channel frequencies

UHF: FRS (Family Radio Service) and
GMRS (General Mobile Radio Service)
share 22 channel frequencies

GMRS has 8 more available
frequencies than FRS (For repeaters)

VHF - Very High Frequency

26

Frequency range: 30 MHz to 300 MHz

Yagi antenna is widely used with VHF

Better in rural areas but susceptible to a lot of obstructions

A signal transmitted on VHF from a hand-held portable will typically travel about 3-6 miles depending on terrain in a rural area

With a low power home station and a simple antenna, range would be around 30 miles

Ham Assigned VHF Frequencies

27

The VHF (Very High Frequency) band is a crucial part of the amateur radio spectrum, used for local communication and experimentation. Here are some key VHF frequencies assigned to ham radio operators:

•VHF Ham Bands:

- 50 MHz (6 meters) band: 50.000 - 54.000 MHz
- 144 MHz (2 meters) band: 144.000 - 148.000 MHz
- 220 MHz (1.25 meters) band: 219.000 - 225.000 MHz
- 432 MHz (70 cm) band: 430.000 - 440.000 MHz
- 902 MHz (33 cm) band: 902.000 - 928.000 MHz

VHF - MURS

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Multi-Use Radio Service

(MURS) is a license-free group of 5 channels in the VHF range of the radio spectrum

Both personal and business use.

MURS allowed to broadcast at a maximum power of two watts

Can use taller antennas

Can send digital data via MURS

<https://www.fcc.gov/wireless/bureau-divisions/mobility-division/multi-use-radio-service-murs>

Channel	Frequency	Maximum authorized bandwidth	Channel name
1	151.82 MHz	11.25 kHz	MURS 1
2	151.88 MHz	11.25 kHz	MURS 2
3	151.94 MHz	11.25 kHz	MURS 3
4	154.57 MHz	20.00 kHz	Blue Dot
5	154.60 MHz	20.00 kHz	Green Dot

UHF - Ultra High Frequency

29

Frequency range: 300 - 3000 MHz

Because of higher frequency it has shorter range but penetrates obstructions better

- **380-400 MHz** – Allocated exclusively for Federal Government use
- **400-420 MHz** – Allocated for both Federal and non-federal use, such as Industrial/Business radio service
- **420-450MHz band is an Amateur Radio band**
- **450-470 MHz** – Land-Mobile Radio band. Allocated for use by Police, Fire, Government, business, and other 2-way radio services.
- **470-512MHz** – UHF Television channels 14-20

UHF: FRS (Family Radio Services)

30

Proposed by Radio Shack in 1994 for use by families, FRS has also seen significant adoption by business interests, as an unlicensed, low-cost alternative to the business band.

FRS is a license free service - anyone can use

EXCEPT Baofengs are not “legal”

FRS can't be used on most VHF/UHF radios because of two reasons:

- 1) FRS power limit is 0.5 watts
 - 2) FRS antennas must be either non removable or not easily removable.
- Most VHF/UHF radios have removable antennas.

Realistic Range: 0.5 - 2 miles

UHF: GMRS (General Mobile Radio Service)

- GMRS radios are intended for personal use in general communications. A license (\$35) is required and covers an entire family for a decade.
- Share some frequencies with FRS, it offers more power, range and versatility.
- Can use repeaters and up to 50 watts on some channels
- Can send text messages/data

Radio Service	Frequency Mhz	Channel	Notes
FRS-GMRS	462.5625	1	FRS/GMRS shared - 5 watts max
FRS-GMRS	462.5875	2	FRS/GMRS shared - 5 watts max
FRS-GMRS	462.6125	3	FRS/GMRS shared - 5 watts max
FRS-GMRS	462.6375	4	FRS/GMRS shared - 5 watts max
FRS-GMRS	462.6625	5	FRS/GMRS shared - 5 watts max
FRS-GMRS	462.6875	6	FRS/GMRS shared - 5 watts max
FRS-GMRS	462.7125	7	FRS/GMRS shared - 5 watts max
FRS-GMRS	467.6625	8	FRS primary - 500 mW max
FRS-GMRS	467.6875	9	FRS primary - 500 mW max
FRS-GMRS	467.6125	10	FRS primary - 500 mW max
FRS-GMRS	467.6375	11	FRS primary - 500 mW max
FRS-GMRS	467.6625	12	FRS primary - 500 mW max
FRS-GMRS	467.6875	13	FRS primary - 500 mW max
FRS-GMRS	467.7125	14	FRS primary - 500 mW max
GMRS	462.550	15	simplex or repeater output - 50 watts max
GMRS	462.575	16	simplex or repeater output - 50 watts max
GMRS	462.600	17	simplex or repeater output - 50 watts max
GMRS	462.625	18	simplex or repeater output - 50 watts max
GMRS	462.650	19	simplex or repeater output - 50 watts max
GMRS	462.675	20	simplex or repeater output - 50 watts max
GMRS	462.700	21	simplex or repeater output - 50 watts max
GMRS	462.725	22	simplex or repeater output - 50 watts max

VHF/UHF Bands

(Handout)

VHF -UHF Bands

Differences between VHF vs. UHF Frequencies

The primary difference between UHF and VHF radios is their frequency, UHF radios have a wider range of frequencies and work well indoors. VHF radios have smaller frequency so it allows them to reach long distances but also means they can be interrupted by other radios. Here are the major differences between the UHF vs VHF.

Aspect	VHF	UHF
Frequency Range	30 MHz to 300 MHz	300 MHz to 3 GHz
Wavelength	10 meters to 1 meter	1 meter to 10 centimeters
Propagation	Ground wave	Line of sight
Penetration	Less able to penetrate through buildings and dense foliage	Better at penetrating through walls, buildings, and foliage
Range	Typically longer range in open areas	Shorter range, but more consistent in urban settings
Antenna Size	Generally larger	Smaller
Channels Available	Fewer channels	More channels available
Usage	FM radio, TV (channels 2-13), marine and aviation communications	TV (channels 14 and up), cell phones, Wi-Fi, walkie-talkies
Susceptibility to Interference	Less susceptible to electrical interference	More susceptible to interference from electronic devices

VHF – MURS (Multi-Use Radio Service)

Channel	Frequency	Maximum authorized bandwidth	Channel name
1	151.82 MHz	11.25 kHz	MURS 1
2	151.88 MHz	11.25 kHz	MURS 2
3	151.94 MHz	11.25 kHz	MURS 3
4	154.57 MHz	20.00 kHz	Blue Dot
5	154.60 MHz	20.00 kHz	Green Dot

UHF - Family Radio Service and General Mobile Radio Service

FRS GMRS Frequency Chart

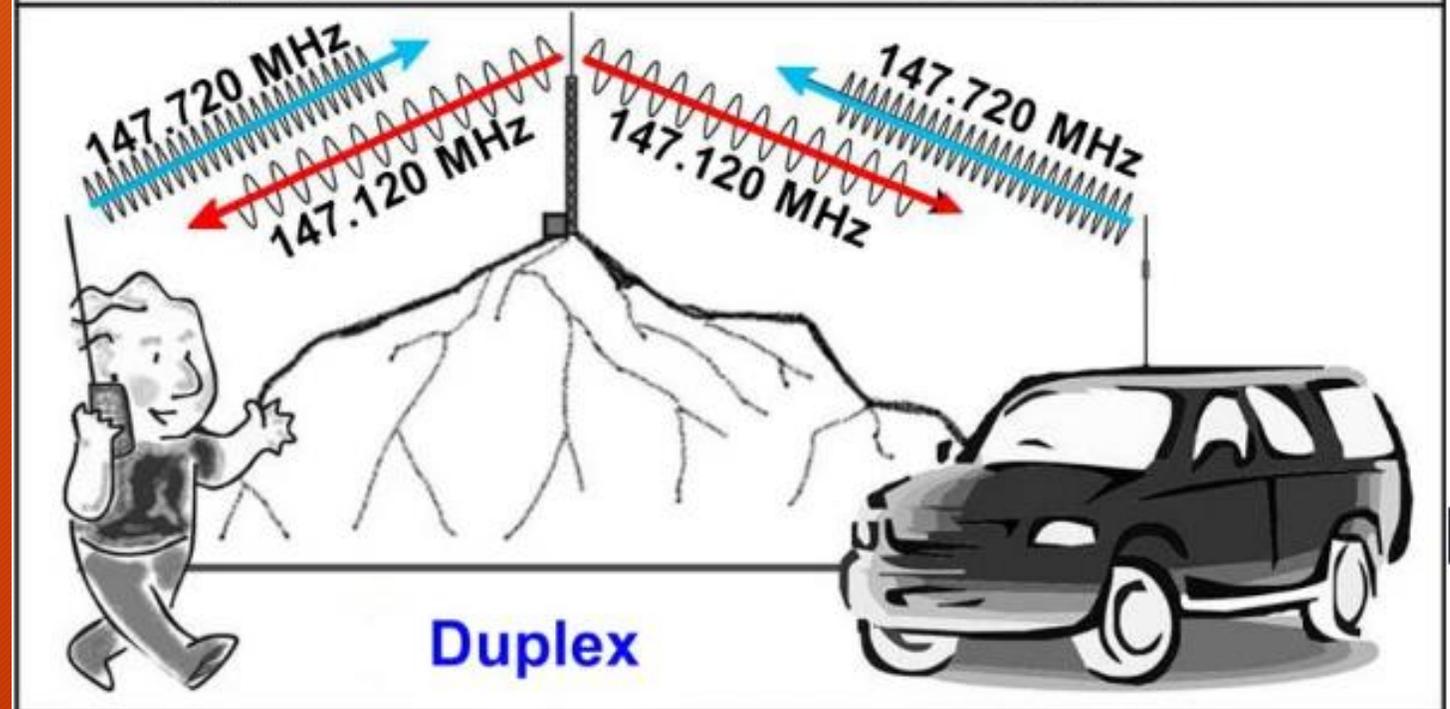
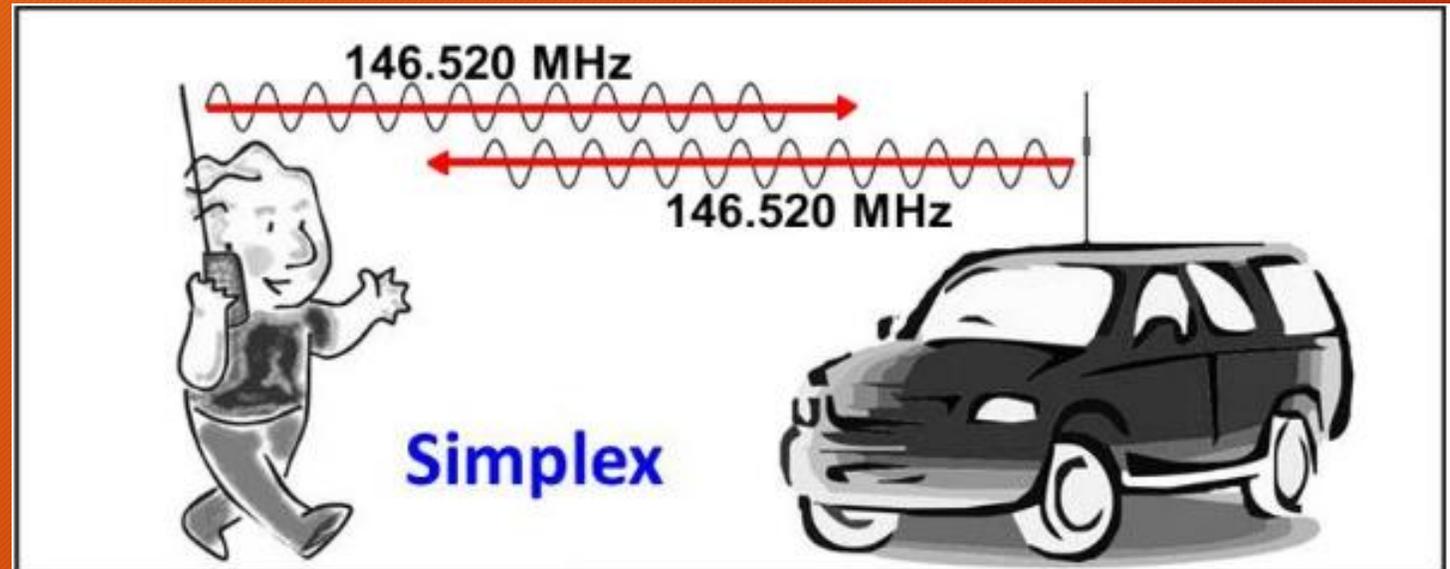
FRS Channel	Frequency	FRS Power	FRS Bandwidth	GMRS power	GMRS Bandwidth	Note/usage
01	462.5625	2W	12.5 kHz	5W	20 kHz	(1)
02	462.5875	2W	12.5 kHz	5W	20 kHz	(1)
03	462.6125	2W	12.5 kHz	5W	20 kHz	(1)
04	462.6375	2W	12.5 kHz	5W	20 kHz	(1)
05	462.6625	2W	12.5 kHz	5W	20 kHz	(1)
06	462.6875	2W	12.5 kHz	5W	20 kHz	(1)
07	462.7125	2W	12.5 kHz	5W	20 kHz	(1)
08	467.5625	0.5 W	12.5 kHz	0.5 W	12.5 kHz	(1)
09	467.5875	0.5 W	12.5 kHz	0.5 W	12.5 kHz	(1)
10	467.6125	0.5 W	12.5 kHz	0.5 W	12.5 kHz	(1)
11	467.6375	0.5 W	12.5 kHz	0.5 W	12.5 kHz	(1)
12	467.6625	0.5 W	12.5 kHz	0.5 W	12.5 kHz	(1)
13	467.6875	0.5 W	12.5 kHz	0.5 W	12.5 kHz	(1)
14	467.7125	0.5 W	12.5 kHz	0.5 W	12.5 kHz	(1)
15	462.5500	2W	12.5 kHz	50W	20 kHz	(1) (2)
16	462.5750	2W	12.5 kHz	50W	20 kHz	(1) (2)
17	462.6000	2W	12.5 kHz	50W	20 kHz	(1) (2)
18	462.6250	2W	12.5 kHz	50W	20 kHz	(1) (2)
19	462.6500	2W	12.5 kHz	50W	20 kHz	(1) (2)
20	462.6750	2W	12.5 kHz	50W	20 kHz	(1) (2)
21	462.7000	2W	12.5 kHz	50W	20 kHz	(1) (2)
22	462.7250	2W	12.5 kHz	50W	20 kHz	(1) (2)
	467.5500			50W	20 kHz	(3)
	467.5750			50W	20 kHz	(3)
	467.6000			50W	20 kHz	(3)
	467.6250			50W	20 kHz	(3)
	467.6500			50W	20 kHz	(3)
	467.6750			50W	20 kHz	(3)
	467.7000			50W	20 kHz	(3)
	467.7250			50W	20 kHz	(3)

Notes

- (1) Shared FRS and GMRS simplex
- (2) GMRS repeater output
- (3) GMRS repeater input only

Simplex Vs Duplex

Peer-to-peer communications with no repeater involvement is referred to as simplex communications.



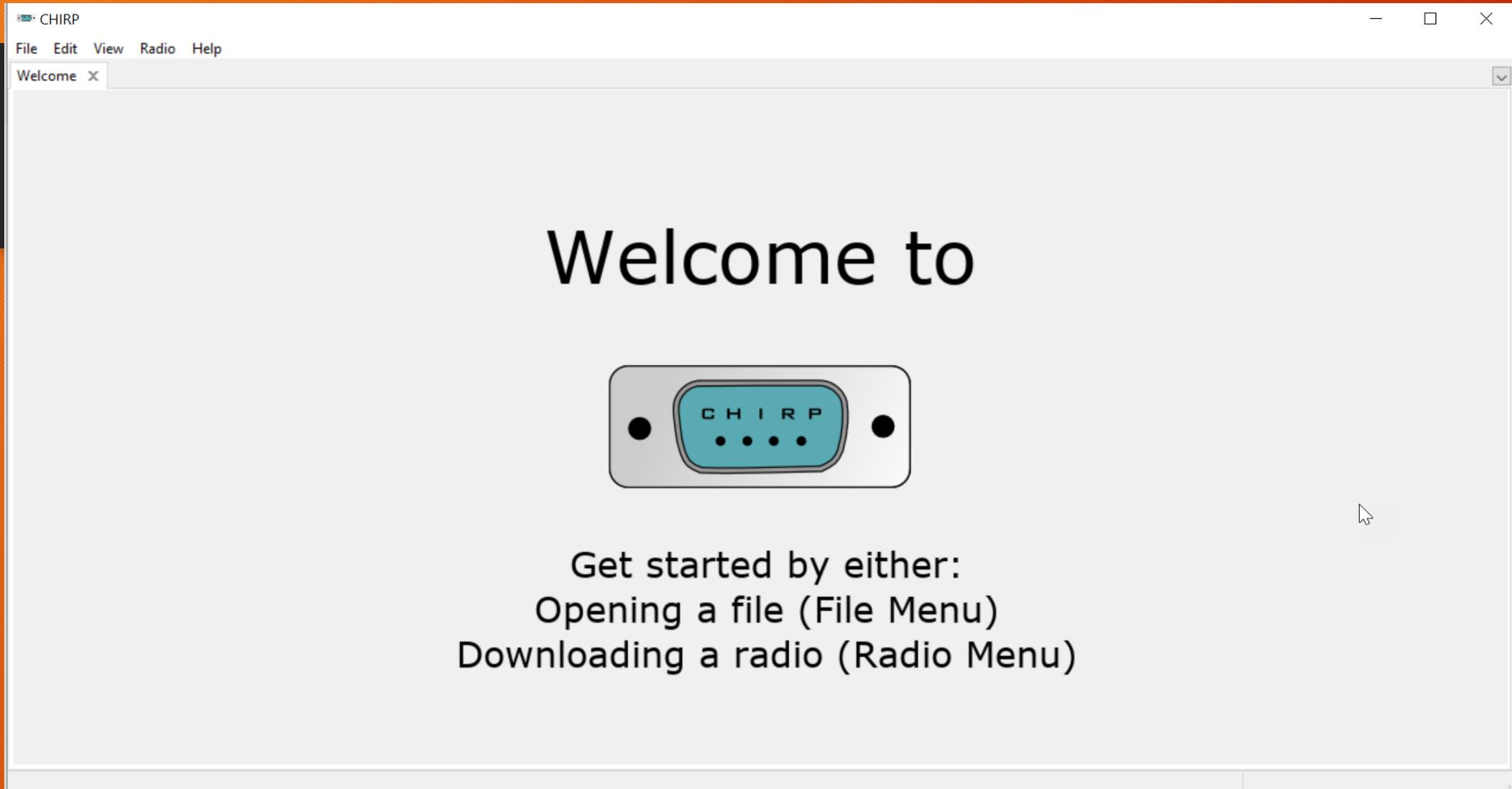
RADIO PROGRAMMING

TO START

- Connect the USB end of the programming cable to your computer.
- Plug the other end into the Baofeng radio.
- Turn on the Baofeng and turn up the volume knob nearly all the way (assures good digital communications back-and-forth with the PC running CHIRP software).
- Open the CHIRP software.

https://www.youtube.com/watch?v=XQ_Jzivmjyl

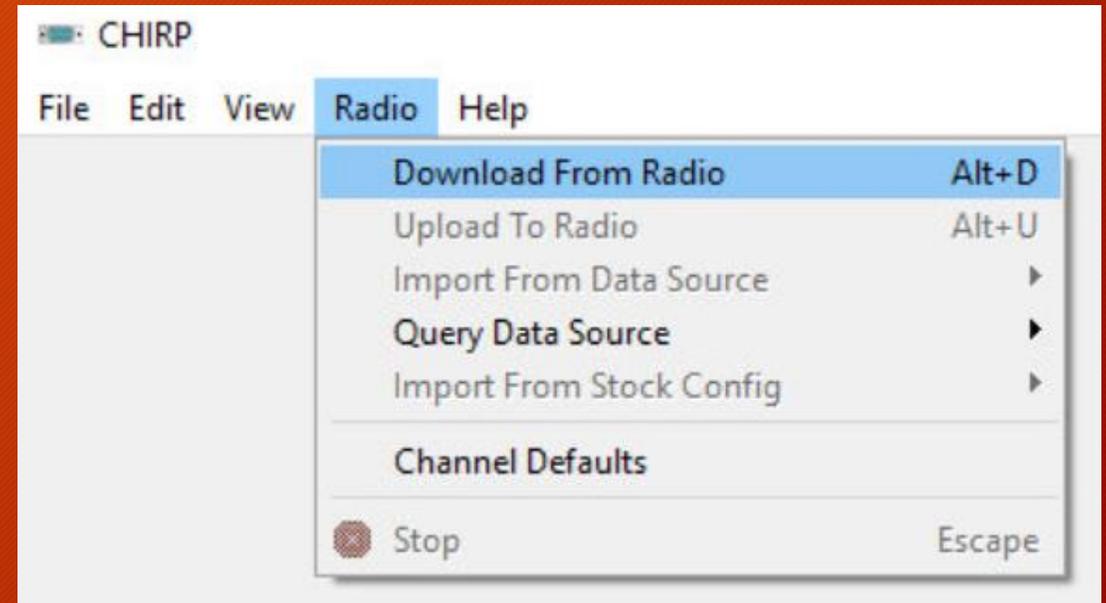




You will be presented with the above screen upon initial setup.

DOWNLOAD FROM RADIO

- Start by selecting ‘Radio.’
- Pull in the data from the Baofeng to view what you have programmed.
- On the CHIRP menu bar, click “Radio”, and then “Download From Radio”.



INSTALL SOFTWARE TO YOUR RADIO

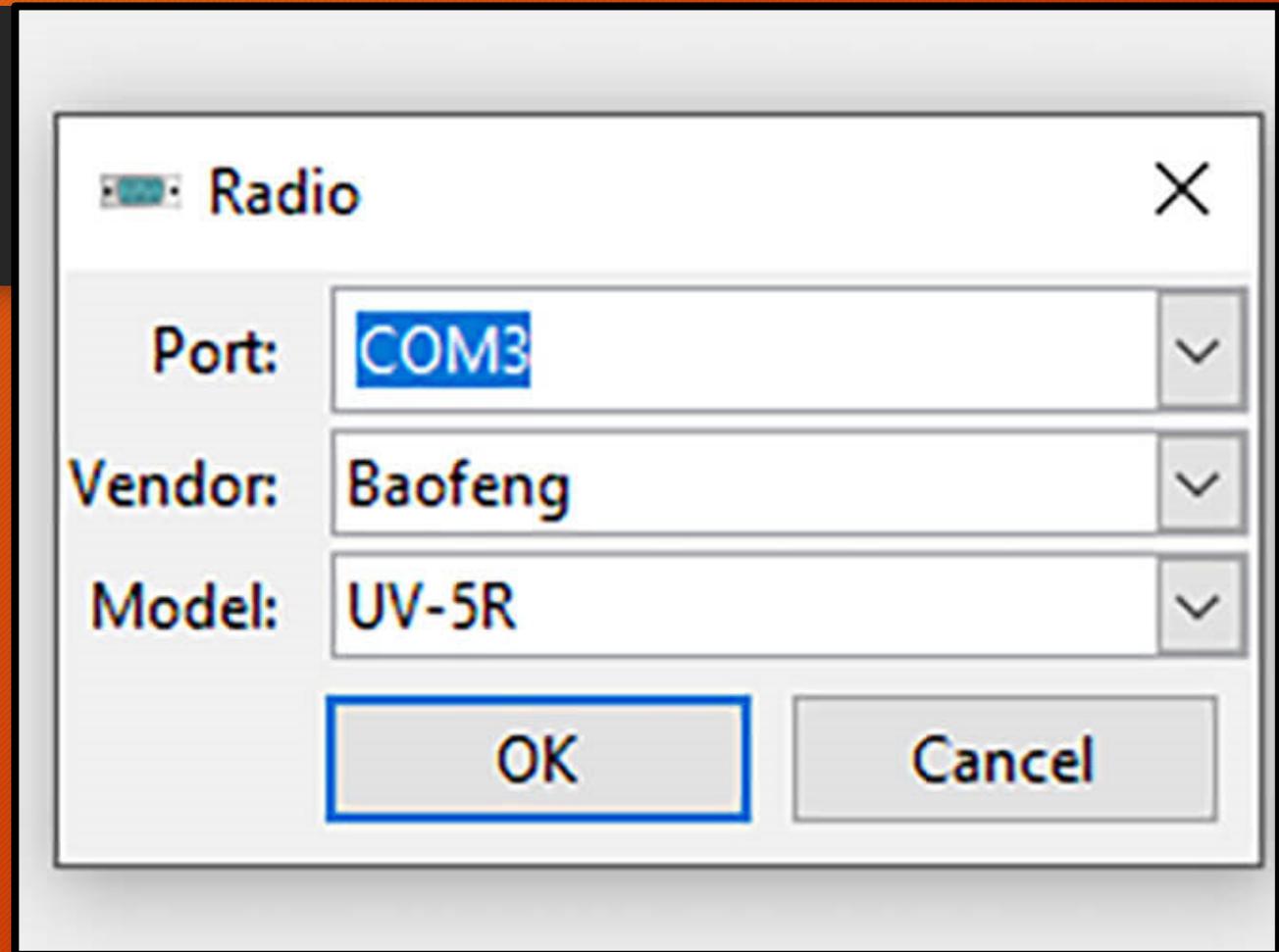
A pop-up appears that is going to want you to select the type of radio you have connected.

For this example, I'm using the Baofeng UV-5R (see our [Baofeng UV-5R instruction manual](#) FMI).

If the program doesn't want to connect to your radio, make sure that you're selecting the proper USB port.

If you don't see your radio - use this link for the appropriate model to use.

<https://chirp.danplanet.com/projects/chirp/wiki/Home>



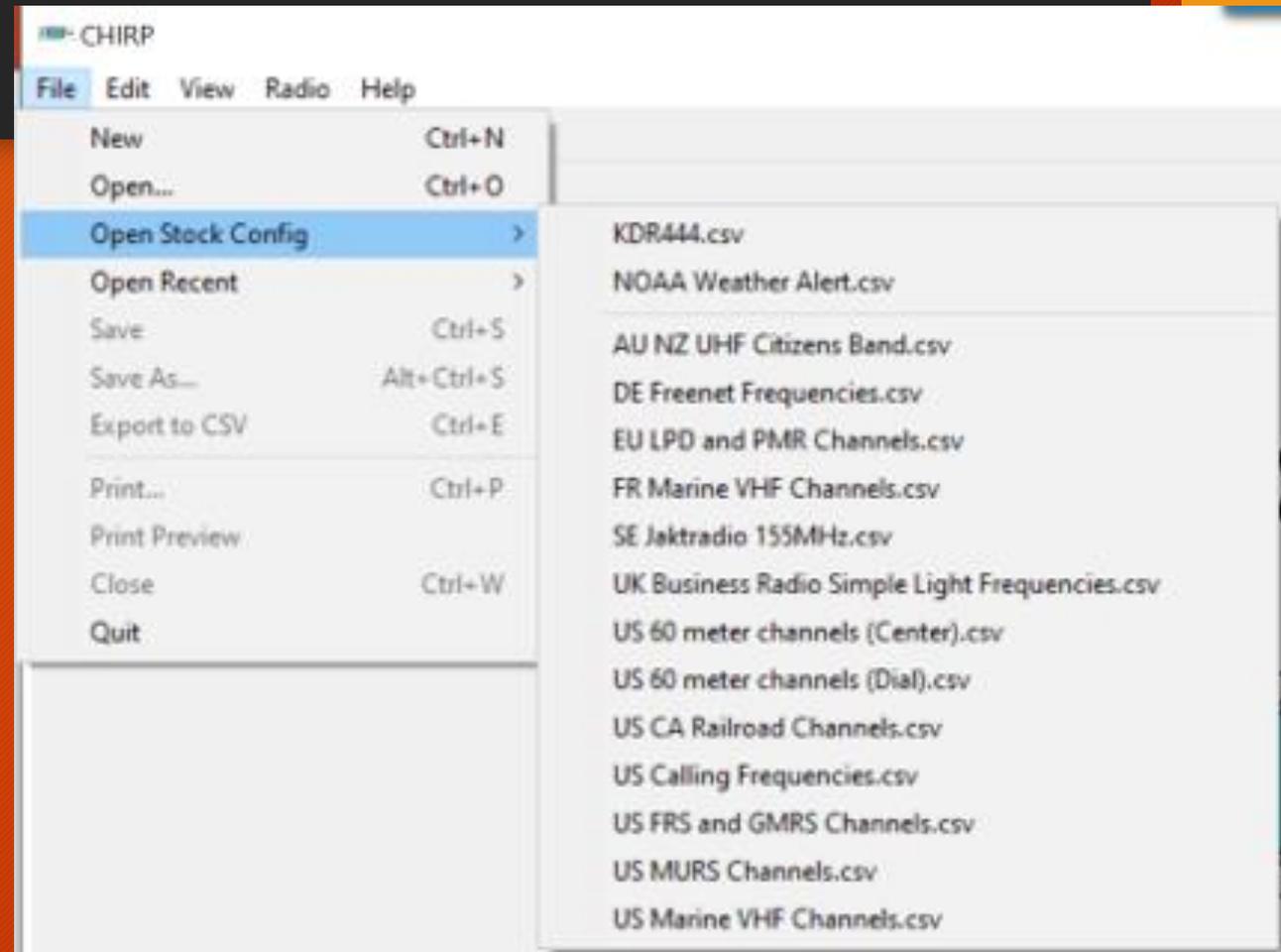
CHIRP uses this information to automatically grey out any repeater it knows the radio cannot accommodate.

CONFIGURATION

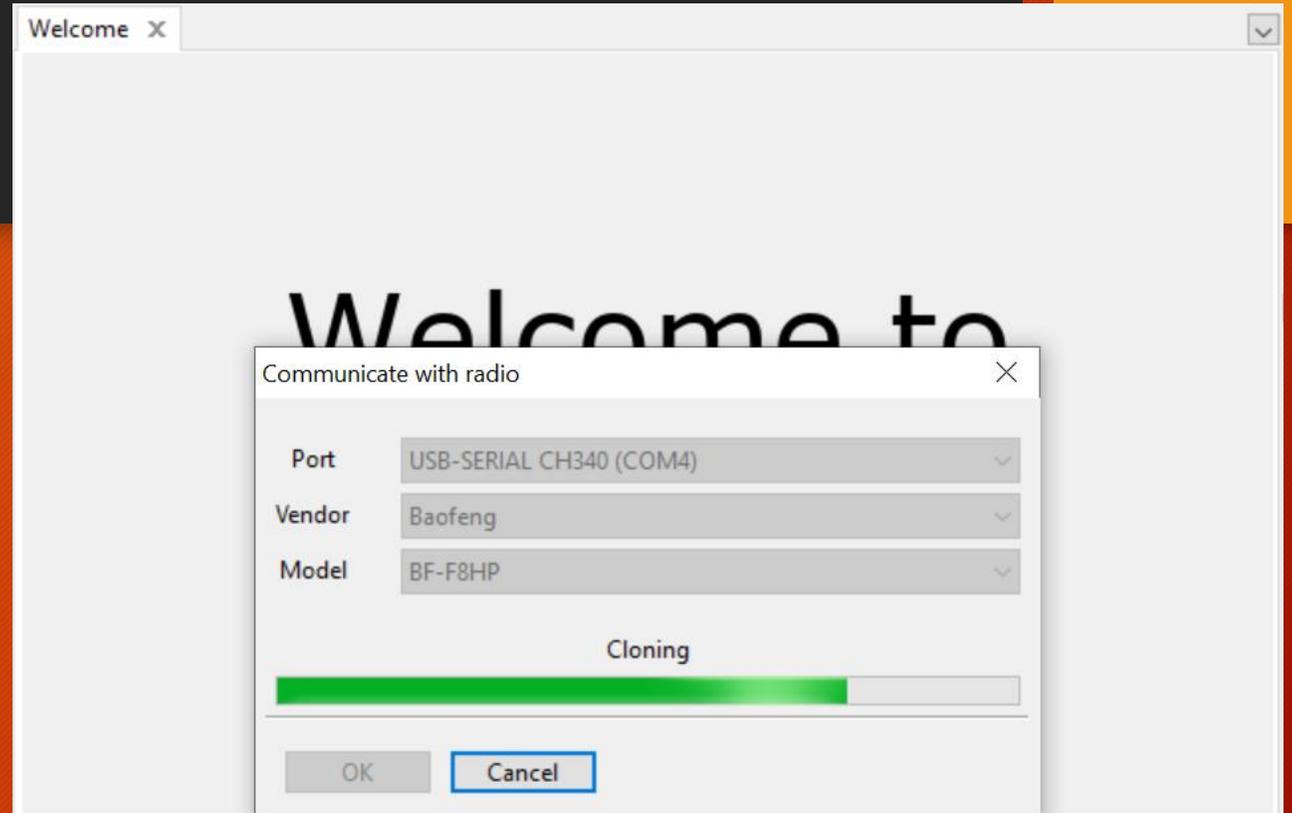
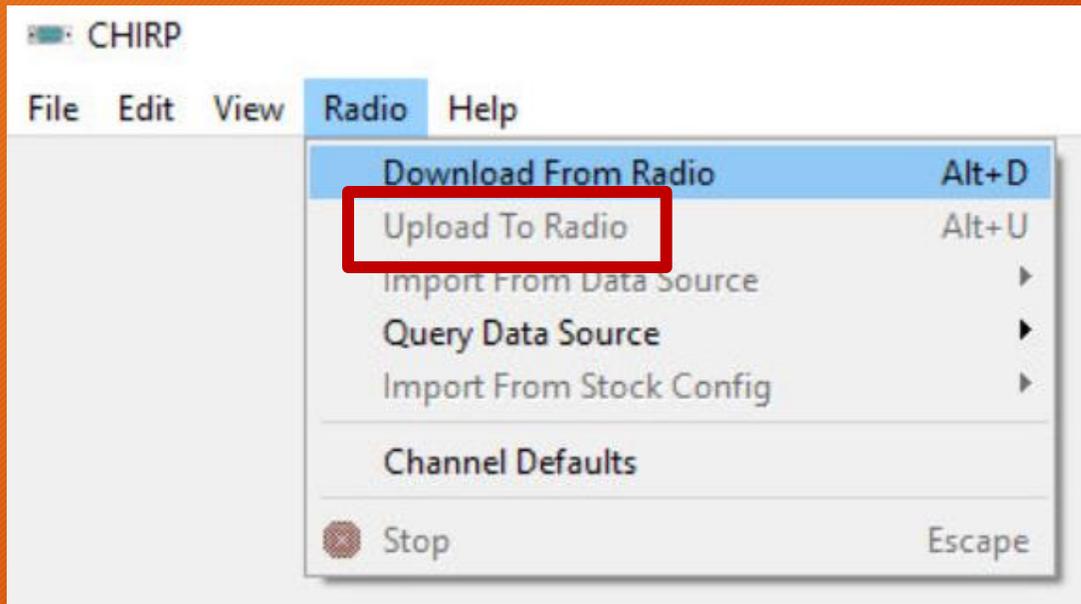
FILE > Open Stock Config

Select the group of channels that you'd like to add to your BaoFeng

OR A Saved File > Open Recent



UPLOAD FILE TO RADIO



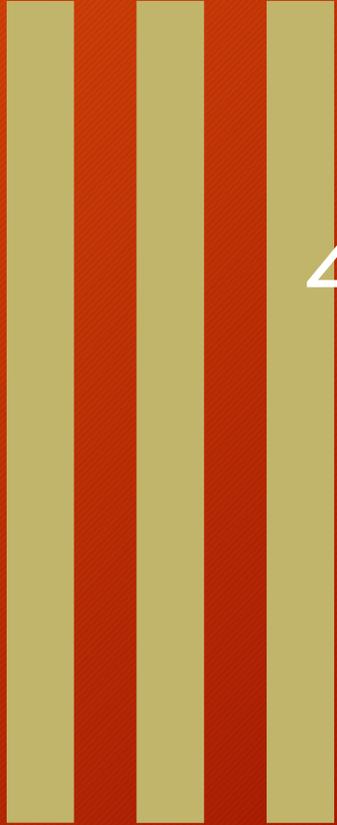
Get started by either:
Opening a file (File Menu)
Downloading a radio (Radio Menu)

Lesson 2:

Questions?

"Whether you think you can, or you think you can't - you're right."

Henry Ford



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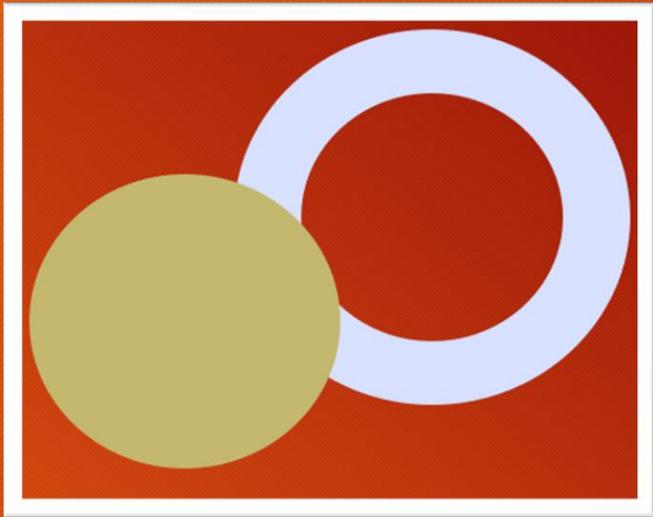
Lesson 3:

Communication Planning and Reports

Lesson 3: Before You Start -

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When you select your channel or frequency- listen for other people talking before you press the PTT to talk.



Radio Use Tips

Press the PTT and wait 1 second for the transmitter to power up - this solves many radio issues

Hold the radio upright - polarization/antenna position matters

Talk across the microphone about 1-2 inches instead of directly into

Radio Calling and PRO Words (handout)

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PRO WORDS

Procedure words are standard, easily pronounced words which have been assigned special meanings to speed up messages handling on radio networks.

Keep Messages Succinct, concise, brief, meaningful, accurate. Speak moderately and deliberately. Write it down.

*Check Menu 9 TOT: Transmission Time Out Timer- if set at 60 - you have 60 seconds to transmit a message

Over: I'm done with this portion, over to you (a reply is expected)

Out: I am done with this transmission/conversation. I will say no more

Break: I am moving to the next part of the message – I am pausing and will continue

- Unkey the mike so someone with any emergency can enter – “Break, Break, Break.”

Roger: Received and understood. Does NOT mean yes, confirm, or affirmative! Always used at end of message to acknowledge 100% receipt of message.

Negative: No

Wilco: I will comply

Acknowledge: I need you to confirm that you hear me

How Copy: I need you to read back what I just told you

I copy: This is what I heard followed by the exact message

Correction: What you said was wrong, correct message is.....

Say again: Please repeat. Don't say repeat- it means something else in the military

Standby: Do not leave the radio, I have more for you

Authenticate: You must prove who you are by giving the proper response to what I am about to say

I authenticate: Here is my authentication answer

DO NOT ANSWER: you are in danger so do not answer, When I am done, shut down the radio and move.

- This could be due to intel of a threat in the area (people nearby looking for you)
- Should cause an immediate switch to your alternate frequency.

Example

Hawk : *“Eagle, this is Hawk , over.”*

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Eagle: *“Go ahead Hawk, over.”*

Hawk: *“Eagle, enemy reported at Hillman Plaza West, break ...”*

Hawk: *“Take cover 0.5 mile East at Hillman Plaza at Position 1, How copy, over”*

Eagle: *“I copy enemy reported at Hillman Plaza West. Take cover 0.5 mile East of Hillman Plaza East at Position 1, over.”*

Hawk: *“Correct, over.”*

Eagle: *“Wilco, over.”*

Hawk: *“Roger, out.”*

Phonetic Alphabet

(Handout)

A - Alpha	J - Juliet	S - Sierra
B - Bravo	K - Kilo	T - Tango
C - Charlie	L - Lima	U - Uniform
D - Delta	M - Mike	V - Victor
E - Echo	N - November	W - Whiskey
F - Foxtrot	O - Oscar	X - X-ray
G - Golf	P - Papa	Y - Yankee
H - Hotel	Q - Quebec	Z - Zulu
I - India	R - Romeo	

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Use standard NATO alphabet(also used in international aviation)

ALWAYS spell phonetically, never say letters

Enunciate each one clearly

Use only numbers 1-9

Ten is 1-0, one hundred is 1-0-0

Communication Plan

SOI

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PACE

“PACE” can be used for all plans

It is 4 plans for every situation

For Communications. It is usually 3 frequencies and 1 non-radio signal

P: Primary

The Main Operating Frequency for that operation/time period

A: Alternative: The 2nd frequency in case of issues

C: Contingency: Something is wrong we need pickup

E: Emergency - Audible or visual signal for Recovery Team to confirm identity

SOI- Signals Operating Instruction

(Handout)

A Communications Plan

COMMUNICATIONS PLAN - SOI: CALL SIGNS

- Call signs assigned as a theme - Birds, trees, sports teams, Norse Gods
- Each element or team have its own call sign
 - Teams in the Field
 - Command Post /TOC/Tactical Operations Center
 - Recovery/Quick Reaction Team
 - Any other element
- An Overall commander may use his own call sign not the list, but
- it needs to be listed on the SOI

What is a TOC?

The Tactical Operations Center or TOC, is the main radio station at your home base

Someone should be manning the radios there 24/7

Role is to coordinate and accept reports in the field

Maintains a communication log of what messages were passed, generally.

Comms Plan-SOI: Challenge/Password

- Every plan needs a Challenge and Password authentication
- This enables people to validate they are talking to or inking up with the right people
- The words must not suggest each other
Example - Basket/Ball or Biden/Fraud
- Use completely unrelated words that are not easy to guess
- Use words hard for the opposition to pronounce if foreign Adversaries
- This is generally for face-to-face operations

Comms Plan - SOI: Authentication

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Numerical Challenge

Each day, assign a random odd number under 20

Example - the Numeric Challenge on the SOI is 9

The initiator says “Authenticate 5”

The person being challenged answers with the number needed to add up to 9 and would answer “I authenticate 4”

Odd numbers are used because statistically even numbers are easier to guess and be right

Comms Plan - SOI: Authentication

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SARNEG - Search and Rescue Numerical Encryption Grid

Developed to get downed pilots to specific grid location without enemy knowledge

Need 10 letter word - isogram (*handout*)- that has no repeating letters

Randomly write 0 -9 under each letter to create the grid

A	F	T	E	R	S	H	O	C	K
6	7	8	9	0	1	2	3	4	5

Comms Plan - SOI: SARNEG Authentication Process 54

Challenging party says “Authenticate using a letter and number from SARNEG in SOI

Responding party gives corresponding Number and letter

Example using AFTERSHOCK example:

“Authenticate Tango two”

“I authenticate Eight Hotel”

More secure than numeric challenge.

AMRRON uses this as well as NC Scout in his Radio Recon Group

A	F	T	E	R	S	H	O	C	K
6	7	8	9	0	1	2	3	4	5

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Authenticate Tango Two
I authenticate Eight Hotel



manuscript
matchboxes
mayflowers
motherland
mudslinger
neighborly
nightclubs
nightmares

PRACTICE

Authenticate (Letter/Number) _____

I authenticate (Number/Letter) _____

Comms Plan - SOI: Duress Word

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A duress word is a **covert signal used by an individual who is under duress or coercion to convey their compromised situation to others.** This phrase is typically embedded in normal conversation, allowing the individual to alert responders without arousing suspicion

Using radios- when anyone hears the duress code (most often given as part of the authentication response) - everyone switches to the alternative frequency

The same word can be used as a “running Password”

If one part of the team is attacked and is breaking contact, they can shout the running password as they near friendlies

Comms Plan - SOI: Comms Time Window/Schedule

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For Security/Intel Operation Team, establish a Comms Window

These are planned check in times that are usually once in the morning, once in the evening

Team in the field reports what they have done in the last time period and what their plan is for the next time period.

Have a plan if someone misses the window

SOI - Sample Chart

(Handout)

Signals Operating Instructions (SOI)- Sample Chart

DURATION OF SOI: Determine if used for a day/week/length of operation/etc

Call Signs for Teams usually follow a theme.

TOC (Tactical Operations Center): Commander monitors for Situational Awareness and documents calls -
Example - Miller

TEAM 1: E-Pabst

TEAM 2: E-Bud Light

REACT (Recovery/Quick Reaction Team): E-Lonestar

NUMERIC CHALLENGE: Random odd # under 20 (change every day) example: 9
To initiate challenge, say "Authenticate 5"
Response: "I authenticate 4"

CHALLENGE/PASSWORD: Completely unrelated words usually used for F2F encounters
Used to identify "friendlies"
Example: Dog/Horse
"Did you see the lost dog poster?"
"No, I thought they were looking for a horse."

DURESS: a duress Code is a Word that tells the other half of a Conversation that they are being forced to use the radio or indicate a team in distress.

When anyone hears the duress Code over the radio, most often given as part of the authentication response, everyone switches to the alternate frequency.

SARNAG: Search and Rescue Numeric Encryption Grid
10 letter words with non-repeating letters (Isogram)
Corresponds with numbers 0-9 (start randomly in order)

A	F	T	E	R	S	H	O	C	K
6	7	8	9	0	1	2	3	4	5

Challenging party says "Authenticate" and gives a letter and a number: "Authenticate Tango Two"
Person answering the Challenge gives the Corresponding number and letter: "I authenticate Eight Hotel"

PACE FORMAT: (Remember to enter 6 digits in frequency.)

PRIMARY: The main operating frequency for that operation/time period (VHF-rural/UHF-urban)

ALTERNATIVE: The secondary frequency in case of issues

CONTINUENCY: Something has gone wrong and we need pickup

EMERGENCY SIGNAL: Audible or visual signal to the recovery team to confirm identity.

SALUTE REPORT (handout)

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A report used to describe any activity observed by a team in the field

S: Size - How many people (pax) of vehicles (vics)

A: Activity - What are they doing

L: Location - landmark or grid location of what you saw-not where you were

U: Uniform - what they were wearing/patches/etc

T: Time. Time observed not reported

E: Equipment - what do they have that is important or relevant

Be specific, be concise, be descriptive

SALUTE REPORT - CALLING IT IN

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Use SOI

Write it down - spell out each line so you don't forget anything

Call in each line separately separated by break. Remember someone is trying to write all this down to repeat back to you

Line Sierra - break.....Line Alpha - break.....and so on

At the end of report ask TOC - How Copy?
Listen and correct or reply "Good Copy."

SALT REPORT - A SALT report is an update to a previously reported SALUTE report

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It is only given if there is a change in the circumstances being monitored/observed

People departed or arrived

Change in vehicles - departed or arrived

S: Size - Describe new size

A: Activity - What happened to prompt a new report and what are they doing now?

L: Location - Advise if they moved

T: Time - Time the change occurred

SALUTE_SALT REPORT

(Handout)

1. Set up SOI first
2. Brief Team on SOI
3. Start by authenticating
4. After Authentication- send your report

SPOT REPORT/SALUTE			SALT
	LINE	ITEM	
SIERRA Line Sierra	1.	SIZE How many people (PAX) or Vehicles (VICS) (Break)	
ALPHA Line Alpha	2.	ACTIVITY What are they doing? (Break)	
LIMA Line Lima	3.	LOCATION Landmark or grid location of what you saw, not where you were (Break)	
UNIFORM Line Uniform	4.	UNIT/UNIFORM What were they wearing/patches/etc. How can we positively identify (PID) them? (Break)	
TANGO Line Tango	5.	TIME OBSERVED Time observed, not time of report/ call out in single digits. Agree on format – military time. (Break)	
ECHO Line Echo	6.	EQUIPMENT What did they have that was important or relevant? Details on weapons, equipment, capability. (Break)	

Sample SALUTE Report:

HM (TOC), this is CN, Over
 CN, this is HM. Authenticate One One, ~~Over~~.
 HM, this is CN. I authenticate Zero India. Stand by for Salute Report, ~~Over~~.
 HM: Roger, Standing By
 CN: Line Sierra: 7 PAX, 1 VIC. Break
 Line Alpha: Conducting pre-movement checks. Break
 Line Lima: Northeast Corner of Wing and Vandecar Roads. Break
 Line Uniform: Brown hats, Black hoodies, red arm bands, military boots. Break
 Line Tango: One Two Five Seven, local. Break
 Line Echo: Plate carriers, AR-15s with IR laser. How Copy, Over
 Holding position at Main and Main
 Will remain in position until otherwise directed
 HM: I copy (repeats report back to field team)
 At the end of report: Good copy. CN out.

But WAIT, there's more!

Other Report Formats - STATREP

This is used to determine how widespread the effect of an incident/disaster is having

TOC compiles reports to analyze and prioritize who needs help and plan next steps

Prepping organizations use these to gather from a larger geographic area.

STATREP - Status Report

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Reporting party, date and time of report

Description of Emergency/Incident

Reporting party reports on the following areas using:

Green - Good

Yellow - At risk

Red - Bad

In their area:

- Power
- Water Supply
- Security/Emergency Services
- Food Availability
- Sanitation
- Medical Infrastructure/Situation
- Transportation Infrastructure

AmRRON and TAPRN

The American Redoubt Radio Operators Network
The American Preparedness Radio Network

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A STATREP can be used to gather reports from larger geographic areas at the beginning of an event and used to evaluate/determine if the group needs to make changes or send resources.

<https://amrron.com/2023/06/18/white-paper-statrep-forms-and-formatting-2023/>

<https://coilgun.info/rover-wa/images/Maidenhead-Grid-US-4digit.jpg>



AmRRON
STATREP

STATREPS for you and others

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The STATREP is designed to provide a snapshot of disruptions to services and helps others in the network better understand the size and scope of an event, as well as more easily identify trends and ‘hot spots’ during a disaster or other emergency.

A STATREP can be used to report conditions at your location, or the conditions of other locations as you become aware, especially if the source is unable to report to the AmRRON network.

For example, if your brother arrives with his family after an emergency reporting that the town he lives in, and just arrived from, is experiencing disruptions to services, or there were transportation hazards along the way (the bridge crossing the river on Hwy XX is out), you might be able to generate a STATREP for the town and/or the bridge he came from or encountered.

You may come into contact with another ham operator over the air (possibly even randomly) who reports the conditions at his location another state away. You see that no one else has reported the status of that location, so you could generate a STATREP for the location of the other ham operator and submit it to the AmRRON net, for others’ situational awareness.

STATREP – STATUS REPORT (Handout)

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Reporting party, Date and Time of Report -

Description of Emergency/Incident -

Reporting Party reports on the status in their area on the following categories using a color-coded priority assignment Green = Good; Yellow = At Risk; Red = Bad

POWER

WATER SUPPLY

SECURITY/EMERGENCY SERVICES

FOOD AVAILABILITY

SANITATION

MEDICAL INFRASTRUCTURE/SITUATION

TRANSPORTATION INFRASTRUCTURE

STATREP STATUS EXAMPLE

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Reporting party, Date and Time of Report – Country Nurse- Feb 19 at 1120

Description of Emergency/Incident – Widespread power outages, cell towers down, unknown cause

Reporting Party reports on the status in their area on the following categories using a color-coded priority assignment:

Green = Good; Yellow = At Risk; Red = Bad

POWER – Red. Widespread outages

WATER SUPPLY – Yellow due to lack of power

SECURITY/EMERGENCY SERVICES – Yellow – non-stop calls for resources. Emergency personnel leaving stations and going home. Looting concerns.

FOOD AVAILABILITY – Yellow- grocery stores closed, concerns on food insecurity

SANITATION - Yellow

MEDICAL INFRASTRUCTURE/SITUATION – Red – hospitals full and refusing patients

TRANSPORTATION INFRASTRUCTURE – Yellow, multiple emergency vehicles out with impending fuel shortages.

Other Report Formats - (Handout)

LAT (LOCATION/ACTIVITY/TIME)

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PURPOSE: To check on small elements out gathering information/intel and we want to check on them and report back

TOC initiates the call and asks the deployed team for a LAT Report

1. Give Status:

RED - Needs Assistance
GREEN -All Good

2. Line Lima:

Current Location

3. Line Alpha

What you are doing/Where you are going

4. Line Tango

Current time by your watch- may want to have TOC check against it

EXERCISE: Develop a brief SOI

Divide into 3 groups:

- TOC (Stay in room)
- 2 Patrol Groups -Develop a complete SOI
- Each Group Calls Salute Report to TOC
Use duress word

PRACTICE SENDING AND RECEIVING REPORTS

1. SALUTE REPORT
2. SALT REPORT

Review 3:

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Questions?

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